

ORIGINAL

IN THE UNITED STATES COURT OF FEDERAL CLAIMS

FILED

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U.S. COURT OF  
FEDERAL CLAIMS

LARRY GOLDEN,

Plaintiff,

V.

UNITED STATES,

Defendant.

1:13-cv-307-SGB

Judge Susan G. Braden

February 11, 2016

**AMENDED COMPLAINT**

On December 22, 2015, the court convened a telephone status conference.

Pursuant to the status conference, the court grants Plaintiff leave to file an amended complaint by February 15, 2016. The court will convene another telephone status conference on March 1, 2016. Plaintiff will submit a claims chart by March 15, 2016.

PLAINTIFF LARRY GOLDEN makes the following allegations in support of its claim for relief.

**PARTIES**

1. Plaintiff Larry Golden is a citizen of South Carolina and has a principal place of business at 740 Woodruff Road, #1102, Greenville, S.C. 29607.

2. The United States is the Defendant to this action based upon the actions and conduct of its agents, including at least the following agencies: Department of Homeland Security (DHS), Domestic Nuclear Detection Office (DNDO), Department of Defense (DoD), U.S. Defense Advanced Research Projects Agency (DARPA), National Science Foundation (NSF), Department of Air Force (DOAF), National Institutes of Health (NIH), National Aeronautics and Space Administration (NASA), Department of Energy (DOE), Department of

the Army (DOA), U.S. Army Edgewood Chemical Biological Center (ECBC), Army Research Laboratory (ARL), Department of the Navy (DON), U.S. Naval Air Systems Command (NAVAIR), Office of Naval Research's (ONR), U.S. Naval Research Laboratory (NRL), U. S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), Defense Threat Reduction Agency (DTRA), Environmental Protection Agency (EPA), and Federal Emergency Management Agency (FEMA) (collectively "Unlicensed Manufactures").

3. Plaintiff has included a list of Government Agencies and Government Representatives Plaintiff gave notice of Plaintiff's patented claims, patent pending claims, and subject matter disclosed within the patent(s) specifications. (Exhibit A)

### **JURISDICTION**

4. This is a claim pursuant to 28 U.S.C. §§ 1498(a) and 1491(a) for recovery of Plaintiff's reasonable and entire compensation for the unlicensed use and manufacture, for and by the United States, of inventions described in and covered by United States Patent Numbers: 7,385,497; 7,636,033; 8,106,752; 8,334,761; 8,531,280; RE43,891; RE43,990; 9,096,189; and Published Patent Application No. 2016-0027273 A1

5. The jurisdiction of this Court is based on the provisions of 28 U.S.C. §§ 1498(a) and 1491 (a).

### **FACTUAL BACKGROUND**

6. The patents asserted in this Amended Complaint are U.S. Patent No. 7,385,497 ("497 Patent") (Exhibit B), U.S. Patent No. 7,636,033 ("033 Patent") (Exhibit C), U.S. Patent No. 8,106,752 ("752 Patent") (Exhibit D), U.S. Patent No. 8,334,761 ("761" Patent) (Exhibit E), U.S. Patent No. 8,531,280 ("280" Patent) (Exhibit F), U.S. Reissue Patent No. RE43,891 ("891 Patent") (Exhibit G), U.S. Reissue Patent No. RE43,990 ("990 Patent")

(Exhibit H), U.S. Patent No. 9,096,189 (“’189 Patent”) (Exhibit I), and Published Patent Application No. 2016-0027273 A1

7. The above listed patents are lawfully issued, valid, and enforceable U. S. Patents.

8. Plaintiff is the sole owner of the entire right, title, and interest in and to the above listed patents.

9. On April 30, 2014, the U.S. Department of Homeland Security filed a petition for *inter partes review* of U.S. Reissued Patent No. RE43,990 (“the ’990 patent”) before the Patent Trial and Appeal Board (“PTAB”) of the U.S. Patent and Trademark Office (“USPTO”), pursuant to 35 U.S.C § 120 (priority) that challenge the subject matter of the ’990 patent priority date of April 5, 2006. The petition for *inter partes review* reads as follows:

10. “The reissue application that became the ’990 patent was based on U.S. Patent No. 7,636,033. The ’033 patent issued from application serial No. 12/155,573 filed June 6, 2008. The ’573 application is a continuation-in-part of Application No. 11/397,118 filed April 5, 2006. At least claims 11, 74 and 81 of the ’990 patent are not entitled to benefit of the April 5, 2006 filing date pursuant to 35 U.S.C § 120. Elements of each of these claims relate to a purported embodiment of Patent Owner’s alleged invention that employs cell phones, PDAs, cell towers, and/or smart phones (the same embodiment Patent Owner purports to assert in the related litigation). The description of these elements found at col. 6, 11. 43-61, at col. 11, 1. 23-col. 13, 1. 65, and in Figs. 17-19 of the ’990 patent were not present in the disclosure of the ’118 application. In fact, no description of this structure nor the words phone, cell, and PDA are found anywhere in the parent ’118 application. (Ex. 1005, Vishwanath Decl., para. 80). Thus, at least

claims 11, 74, and 81 are entitled only to the filing date of the '573 application, June 6, 2008.”

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11. On October 1, 2015, when the PTAB issued its final written decision. *See* ECF No. 61, Ex. A. (10-05-2015) In its decision, the PTAB confirmed the Plaintiff's priority filing date for all subject matter related to cell phones, PDA's, cell towers, and/or smartphones is April 5, 2006. *Case 1:13-cv-00307-SGB Document 61 Filed 10/05/15 Pages 17, 21-22, and 30 of 37 reads as follows:*

12. PTAB's Final Written Decision: "Petitioner's declarant, however, has put forward a detailed discussion of various references dated before April 2006<sup>4</sup> (the date Patent Owner now alleges is the priority date) related to subject matter of the '990 patent... 4We accept this date as the priority date only for the sake of argument." *Case 1:13-cv-00307-SG8 Document 61 Filed 10/05/15 Page 17 of 37*

13. PTAB's Final Written Decision: "Patent Owner argues that [t]he specific devices removed, such as the cell phones and smart phones would be recognized by one of ordinary skill in the art as a type of communication device or monitoring equipment because cell phones and smartphones are devices that are capable of communication and are capable of receiving signals." *Case 1:13-cv-00307-SG8 Document 61 Filed 10/05/15 Page 21 of 37*

14. PTAB's Final Written Decision: "As Patent Owner explains, the added language is broad enough to include the removed items, and is intended to reflect the entire genus of "monitoring equipment" and "communications devices" that "are capable of communication and capable of receiving signals." *Case 1:13-cv-00307-SG8 Document 61 Filed 10/05/15 Page 21 of 37*

15. PTAB's Final Written Decision: "We agree with Petitioner and find, based on the Patent Owner's own arguments, that these terms improperly broaden the scope of the claims." *Case 1:13-cv-00307-SG8 Document 61 Filed 10/05/15 Page 21 of 37*

16. PTAB's Final Written Decision: "We agree with Patent Owner's understanding that 'built-in' reflects a broader genus of which 'embedded' is a particular species. As we explained in the Decision to Institute, the term 'built-in' generally means 'constructed to form an integral part of a larger unit'." *Case 1:13-cv-00307-SG8 Document 61 Filed 10/05/15 Page 22 of 37*

17. On October 2 and 11, 2015, Plaintiff sent e-mails to the PTAB that constituted a request for rehearing because Plaintiff disagreed with the PTAB's decision to reintroduce prior art the PTAB had initially ruled as "not a necessary use of resources" without giving the Patent Owner an opportunity to Reply during the *Inter Partes Review*. The decision reads as follows:

18. PTAB's Final Written Decision: "We next consider Patent Owner's argument that Astrin, Mostov, and Breed are not prior art because the amended claims are entitled to the April 5, 2006 priority date. Mot. to Amend 2-7. Even accepting, for the sake of argument, that the substitute claims are entitled to this earlier priority date, at the very least, Mostov remains prior art under 35 U.S.C. § 102(e) because Mostov's non-provisional filing date is January 30, 2006. Ex. 1003, at [22]. The fact that we did not institute this proceeding on Mostov does not mean it is no longer relevant to the patentability of the substitute claims. In deciding not to institute on Mostov, we did not rule on the merits of Petitioner's case. Dec. to Inst. 28-29. We merely determined that, given the Astrin and Breed references, instituting on Mostov was not a necessary use of resources. We consider Mostov still to be relevant to the

patentability of the claims. Thus, Petitioner's arguments regarding the priority date, even if accepted, do not show patentability over Mostov.” *Case 1:13-cv-00307-SG8 Document 61 Filed 10/05/15 Page 30 of 37*

19. Mostov provisional application filing date, which is the priority date accorded Mostov for Patent No. 7,990,270 is January 28, 2005. The Patent Owner’s “Disclosure Document” (Dis. Doc. No. 565732) (Exhibit J) for his claimed inventions is November 26, 2004. A priority date that antedates the January 28, 2005 priority date of Mostov and therefore disqualifies the Mostov ‘270 patent as prior art.

20. The Patent Owner has narrowed the amended complaint to only include the communication device / monitoring equipment of at least one of the products grouped together by common features in the product groupings category of design similarity (i.e. computer terminal, personal computer (PC), laptop, desktop, notebook, tablet, handheld, cell phone, PDA or smart phone); claims that are directed to the utility of:

21. A communication device / monitoring equipment that has an embedded (built-in) biometric fingerprint scanner as a security feature designed to deny access to the device by unauthorized individuals.

22. A communication device / monitoring equipment that has an embedded (built-in) lock disabler device designed to lock the device after a certain number of unsuccessful attempts to open (use) the device.

23. A communication device / monitoring equipment that has an embedded (built-in) near-field communication (NFC) sensor for very short range radio frequency (RF) communication with a near-field communication (NFC) tag or device that is near-field communication (NFC) capable.

24. A communication device / monitoring equipment that has a physical interface that is at least in, on, upon, or adjacent the communication device / monitoring equipment for interconnecting the communication device / monitoring equipment to at least one of a sensor, a detector case, a multi-sensor detection device, a locking device, a cell phone detection device, a stall-to-stop vehicle slowdown system, or any of the products listed in any of the product grouping categories.

25. A communication device / monitoring equipment that has a software application interface that is at least in, on, upon, or adjacent the communication device / monitoring equipment for interconnecting the communication device / monitoring equipment to at least one of a sensor, a detector case, a multi-sensor detection device, a locking device, a cell phone detection device, a stall-to-stop vehicle slowdown system, or any of the products listed in any of the product grouping categories.

26. A communication device / monitoring equipment that comprises at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short range radio frequency (RF) connection, or GPS connection.

27. The Patent Owner is providing a summary list of the alleged infringing products that includes the patents asserted and patent claims asserted in this Amended Complaint. (Exhibit K)

28. "TOUGHBOOK 31" Laptop for the K-Max Self-flying Helicopter: The Lockheed Martin K-Max unmanned helicopter is controlled from a Panasonic "TOUGHBOOK 31" Laptop. K-Max has pre-programmed load pick-ups; can fly to pre-programmed and non-pre-programmed locations; controller uses beyond-line-of-sight (BLOS) from a video camera

mounted in cockpit. This is the goal of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program.

29. The K-Max Self-flying Helicopter: The K-MAX self-flying vehicle can be flown by a human sitting in the cockpit, but it cannot be completely remotely piloted; someone on ground controlling everything the helicopter does. A ground controller can, however, use satellite communication and a laptop to change the mission at any point during flight. Retrofitted Device: Autonomous Aerial Cargo/Utility System (AACUS). This is the goal of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program.

30. Apple iPad Tablet for the Boeing MH-6 Little Bird Helicopter: Navy engineers developed a Carbon Monoxide Sensor package that turns any helicopter with a digital flight control system into an autonomous cargo delivery robot. An authorized person is able to land a full-size Aurora Flight Services little bird helicopter by simply touching a map application on a handheld tablet computer, said Chief of Naval Research Rear. Adm. Matthew Klunder. With an iPad the system can autonomously deliver supplies.

31. Boeing MH-6 Little Bird Helicopter: Navy engineers have developed a Carbon Monoxide Sensor package that can turn any helicopter with a digital flight control system into an autonomous cargo delivery robot. The system is called the autonomous aerial cargo/utility system, or AACUS; a 20-year-old lance corporal was able to land a full-size Aurora Flight Services Little Bird helicopter by simply touching a map application on a handheld tablet computer.

32. iControl Inc. "mLOCK": The DHS "TRUST" system Communication Requirements. iControl Inc. locking seal "M-Lock". M-Lock's critical parameter is anti-tamper, multi-modal wireless connectivity. M-Lock's critical function is physical security, location and



alerting; and, is available where wireless connectivity is available. 26. A method for autonomous operation of a locking device based on a status of the locking device as recited in claim 23, wherein the one or more sensors include one or more of a movement sensor, a temperature sensor, a humidity sensor, an infrared sensor, a radioactivity detection sensor, an acoustic sensor, and a chemical detection sensor. (Patent application: mLOCK Device and Associated Methods; US 20100283575 A1).

33. NRL: SiN-VAPOR / Smartphone System: Developed by the U.S. Naval Research Laboratory (NRL) in Washington, D.C., the silicon nanowires in a vertical array with a porous electrode (SiN-VAPOR) sensor: In addition to detecting chemical weapons or explosives, the sensor can be used for identifying biological agents Dr. Christopher Field, the lead NRL scientist on the SiN-VAPOR research team is working with the NRL's biological research group to apply the sensor in this area.

34. Smartphone (iPhone) Microscope: "Smartphone Microscope". Aydogan Ozcan, a professor at UCLA and his team have created a portable smartphone attachment that can be used to perform sophisticated field testing to detect viruses and bacteria. Optical methods for imaging single biomolecules allow for exploration of their individual behavior and properties at nanoscale, significantly advance our knowledge of molecular biology and biophysics. Funding support for the Ozcan Research Group comes from the Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research. Commercialize through Holomic LLC.

35. Samsung Galaxy s6 "BioPhone": A Samsung Galaxy s6 "BioPhone" smartphone can measure your heart and breathing rates, even if you're not directly touching it. Researchers at MIT are working on a project called BioPhone that derives biological signals

from your smartphone's accelerometer, which they say can capture the small movements of your body that result from the beating of your heart and rising and falling of your chest. This information is useful to base medical diagnoses in real-life conditions and to help track chronic health conditions and effects of therapeutic interventions. Research is based upon work supported by the National Science Foundation (NSF CCF-1029585), Samsung, and the MIT Media Lab Consortium.

36. Samsung Galaxy s6 "Microscope" Smartphone: The U.S. Army Edgewood Chemical Biological Center (ECBC) is developing cellphone-based wide-field fluorescent imaging of microbeads for pathogen detection. Scientists at ECBC worked with a team at the University of California, Los Angeles (UCLA), to adapt its prototype of a plastic, clip-on "microscope" to fit a Samsung Galaxy Android phone, commonly used by the Army. This device clips directly over the camera of the Smartphone and operates just like a microscope. The UCLA team is developing the hardware and the software for the device, with ECBC's team providing the diagnostic and detection assays that it will utilize. The team is focused on biological diagnostic tests. ECBC has also partnered with Holomic, LLC, a small business in California.

37. "VOCKET System" / "Nett Warrior" Smartphone System: The Army's Edgewood Chemical Biological Center (ECBC) researchers are refining for Army use a commercial technology that will allow soldiers to accurately and rapidly detect an array of chemical and biological hazards - from mustard agent to anthrax. The VOCKET system is a small electronic device developed at ECBC and even manufactured there, for now, on the center's 3D printers. The device reads the result of chemical detection paper and transmits the results into the Army's network via the soldier-worn "Nett Warrior" smartphone system.

38. Eureka Aerospace High Powered Electromagnetic System, or HPEMS:

The U.S. Air Force request for an "air-delivered capability to disable moving ground vehicles while minimizing harm to occupants." Presumably the Air Force wants to look beyond helicopter-mounted snipers, and so Eureka Aerospace's device could potentially fit the bill. The U.S. Marines have lined up as possible customers. The idea is that an electromagnetic pulse (from a remote location) would be used to disable a car's microprocessors, chips, and whatever other electronics are keeping it running. Boeings; as partner provided funds for research.

39. Northrop Grumman X-47B UCAS / X-47B Control Display Unit (CDU):

The U.S. Navy's UCAS-D program is designed to demonstrate the ability of a, fighter-sized unmanned aircraft to land on and be launched from the flight deck of a Navy aircraft carrier underway at sea. Northrop Grumman Corporation (NYSE: NOC), a leader in unmanned systems, serves as the Navy's prime contractor for the UCAS-D program, which is managed by U.S. Naval Air Systems Command (NAVAIR). Under contract awarded in Aug. 2007, Northrop Grumman designed the X-47B. From a remote place the X-47B Control Display Unit controls the aircraft's stall, stop, and slow-down means.

40. GammaPix for Android Smartphones: GammaPix for Android

Smartphones (e.g. Samsung Galaxy s6) scans for radiation using a smartphone camera sensor. Scanning for radiation and radioactive explosives the camera looks for a particular 'signature' left behind by gamma rays. It measures the rate at which rays hit the lens to determine radiation levels. App detects radiation in planes, hospitals, contaminated items and more. It was created by Connecticut-based developers Image Insight under a \$679,000 contract with the U.S. Defense Advanced Research Projects Agency (DARPA).

41. Smartphone (iPhone) Biosensor "Cradle": University of Illinois

researchers developed a cradle and app for the iPhone to make a handheld biosensor that uses the phone's own camera and processing power to detect any kind of biological molecules or cells. At the heart of the iPhone biosensor is a photonic crystal. When anything biological attaches to the photonic crystal - such as protein, cells, pathogens or DNA - the reflected color will shift. The group received a grant from the National Science Foundation to expand the range of biological experiments that can be performed with the iPhone.

42. MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor: The MIT "NFC"

Smartphone sensors are made from modified near-field communication (NFC) tags. These tags, which receive the little power they need from the Samsung Galaxy s6 smartphone reading them, function as wirelessly addressable barcodes. The modified tags are referred to as CARDS: chemically actuated resonant devices. When a smartphone pings the CARD, the CARD responds only if it can receive sufficient power at the smartphone transmitted radio frequencies (RF). MIT's research was funded by the U.S. Army Research Laboratory and the U.S. Army Research Office.

43. "Cell-All": Synkera MikroKera Ultra: Synkera presented the MikroKera

Ultra Module at the Department of Homeland Security S&T "Cell-All" demonstration in Los Angeles on September 28, 2011. Synkera offers a general purpose digital module for evaluation and use of MikroKera Ultra chemical sensors. Synkera Technologies has been funded by DHS to develop sensors that are suitable for integration into cell phones and other ubiquitous electronic devices carried by first responders and the public at large. The DHS S&T "Cell-All" project goal is to develop sensors that can detect life-threatening gases to be incorporated into cell phones. One feature of the Synkera MikroKera Ultra is: available with or without case.

44. "Cell-All": Samsung Galaxy s6: Synkera presented the MikroKera Ultra Module at the Department of Homeland Security S&T "Cell-All" demonstration in Los Angeles on September 28, 2011. Synkera offers a general purpose digital module for evaluation and use of MikroKera Ultra chemical sensors. Synkera Technologies has been funded by DHS to develop sensors that are suitable for integration into cell phones and other ubiquitous electronic devices carried by first responders and the public at large. The DHS S&T "Cell-All" project goal is to develop sensors that can detect life-threatening gases to be incorporated into cell phones. One feature of the Synkera MikroKera Ultra is: available with or without case. The MikroKera Ultra Module is interconnected to monitoring equipment through Bluetooth communications. The monitoring equipment for this "Cell-All" project is at least a Samsung Galaxy s6 smartphone that has an Android operating system (O/S).

45. "Cell-All": Apple iPhone: The "Cell-All" initiative. The Department of Homeland Security's (DHS) Science and Technology Directorate (S&T), Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. S&T pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. Jing Li, a physical scientist at NASA's Ames Research Center, developed new technology that would bring compact, low-cost, low-power, high-speed nanosensor-based chemical sensing chip which consists of 64 nanosensors and plugs into an Apple iTouch 30-pin dock connector. The device is designed to be plugged in to an Apple iPhone to collect, process and transmit sensor data. The new device is able to detect and identify chemicals in the air using a "sample jet" and a multiple-channel silicon-based sensing chip, which consists of 64 nanosensors, and sends detection data to another phone (e.g. Apple iPhone) or a computer via telephone communication network or Wi-Fi.

46. "Biotouch" Samsung Galaxy s6: Partnership between scientists and engineers at U.S. Army Edgewood Chemical Biological Center (ECBC), iSense, LLC., U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC) and the Defense Threat Reduction Agency (DTRA). ECBC, iSense, CERDEC and DTRA are working together to give warfighters a quick, new way to evaluate potential chemical/biological (CB) threats using smartphones and an encrypted network within minutes. "The idea is to have two smartphones: the Biotouch that could test the VOC and the Nett Warrior phone that would receive the information from a different location. The two will be able to communicate with each other through a phone portal within the encrypted network," explained Emanuel. VOCs are postage stamp-sized, colorimetric sensor assays with 88 different indicator dyes developed by iSense LLC (Boston, MA).

47. "Biotouch System" / "Nett Warrior" Smartphone System: The U.S. Army' developed a biological and chemical detection system. They developed volatile organic compound (VOC) strips that work with a device called a Biotouch. Biotouch relays information from VOC strips and sends results to a Nett Warrior Samsung smartphone, Defense Systems reports. Partnership between scientists and engineers at U.S. Army Edgewood Chemical Biological Center (ECBC), iSense, LLC., U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC) and the Defense Threat Reduction Agency (DTRA). ECBC, iSense, CERDEC and DTRA work is to evaluate potential chemical/biological (CB) threats using smartphones. "The idea is to have two smartphones: the Biotouch that could test the VOC and the Nett Warrior phone. VOCs are postage stamp-sized, colorimetric sensor assays with 88 different indicator dyes developed by iSense LLC (Boston, MA).

48. iPhone "Biodetector" Smartphone: Pro. Brian T. Cunningham, University of Illinois has won a \$300,000 National Science Foundation grant for research into turning smartphones into biodetectors. The biodetectors used in counterterrorism fall into three broad categories: biochemical systems detecting a DNA sequence or protein unique to the bioagent through interaction with a test molecule; tissue-based systems, in which a bioagent or toxic chemical affect living mammalian cells, causing them to undergo some measurable response; and chemical mass spectrometry systems, which break samples down into their chemical components whose weights are then compared to those of known biological or chemical agents.

49. "PathTracker" An iPhone-based Detection Instrument: National Science Foundation (NSF) to invest \$1 million in smartphone-based system for mobile disease detection. Professor Brian T. Cunningham the director of the Micro and Nanotechnology Laboratory (MNTL) and also a bioengineering professor at the University of Illinois, is the principal investigator for PathTracker: A smartphone-based system for mobile infectious disease detection and epidemiology. The PathTracker will mitigate economic losses associated with infectious disease in the horse industry, the developed technology will be equally applicable to humans, food animals, companion animals, Ebola, HIV, tuberculosis, and malaria through a custom handheld detection instrument that interfaces with the back-facing camera of a conventional smartphone (e.g. iPhone).

50. Navy Marine Corps Intranet (NMCI) Network - Apple iPad: (Claim 1)  
The Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts; it is also a unified, flexible and functional IT platform that has become the foundation on which the Navy and Marine Corps support their broader strategic objectives. NMCI connects Sailors, Marines and Civilians in the



continental U.S., Hawaii, and Japan. Navy NMCI users may begin transitioning from Blackberry devices to Apple and Android smartphones and tablets. NMCI users are now authorized to procure and use the iPhone 5s, iPhone 6, and iPhone 6 Plus smartphones, as well as the iPad Air and iPad Air 2 tablets with NMCI Email. All Navy organizations are to begin the contracting and transition process through their wireless account manager for iPhones and iPad service.

Government furnished equipment (GFE). GFE includes laptops; smart phones; tablets; and a virtual desktop solution, such as "NMCI". Unlike GFE, personal devices cannot be integrated into the network's device management tools.

51. Navy Marine Corps Intranet (NMCI) Network - Samsung Galaxy s6:

(Claim 2) The Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts; it is also a unified, flexible and functional IT platform that has become the foundation on which the Navy and Marine Corps support their broader strategic objectives. NMCI connects Sailors, Marines and Civilians in the continental U.S., Hawaii, and Japan. Navy NMCI users may begin transitioning from Blackberry devices to Apple and Android smartphones and tablets. NMCI users are now authorized to procure and use the iPhone 5s, iPhone 6, and iPhone 6 Plus smartphones, as well as the iPad Air and iPad Air 2 tablets with NMCI Email. All Navy organizations are to begin the contracting and transition process through their wireless account manager for iPhones and iPad service.

Government furnished equipment (GFE). GFE includes laptops; smart phones; tablets; and a virtual desktop solution, such as "NMCI". Unlike GFE, personal devices cannot be integrated into the network's device management tools.

52. Navy Marine Corps Intranet (NMCI) Network - Samsung Galaxy s6:

(Claim 3) The Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network



with more than 400,000 seats for more than 800,000 user accounts; it is also a unified, flexible and functional IT platform that has become the foundation on which the Navy and Marine Corps support their broader strategic objectives. NMCI connects Sailors, Marines and Civilians in the continental U.S., Hawaii, and Japan. Navy NMCI users may begin transitioning from Blackberry devices to Apple and Android smartphones and tablets. NMCI users are now authorized to procure and use the iPhone 5s, iPhone 6, and iPhone 6 Plus smartphones, as well as the iPad Air and iPad Air 2 tablets with NMCI Email. All Navy organizations are to begin the contracting and transition process through their wireless account manager for iPhones and iPad service. Government furnished equipment (GFE). GFE includes laptops; smart phones; tablets; and a virtual desktop solution, such as "NMCI". Unlike GFE, personal devices cannot be integrated into the network's device management tools.

53. FLIR: identiFINDER R300 / Smartphone System: FLIR Systems, Inc. announced on June 16, 2011 that the Defense Threat Reduction Agency (DTRA) has awarded it a \$1.1 million contract for a multi-year, multi-phase research and development contract to develop a mobile, ruggedized stand-off radiation detection system with identification capabilities. "FLIR has developed a radiation detection and identification device and is manufacturing the world's leading handheld radio-isotope identifier, the identiFINDER," said William Sundermeier, president of FLIR Detection and Protection. In particular, the FLIR identiFINDER R300 will identify threat objects. A threat object is radioactive material whose signature is that of material used for terrorist purposes. Threat materials are usually those used in a nuclear explosive devices or in Radiological Dispersive Devices ("Dirty" bombs). The device qualifies as a detector case with features of multiple sensors, internet and GPS connection.

54. AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone: The biometrics company AOptix announced on Wednesday, February 13, 2013 that the Pentagon has awarded it, along with CACI International Inc., a \$3 million research contract to develop AOptix's Smart Mobile Identity devices for the US Department of Defense. As Wired reported, a hardware peripheral and software suite that turns a regular Apple iPhone smartphone into a device that scans and transmits data at distances not possible for current scanning technology. AOptix's hardware is a peripheral that wraps around a smartphone, so that it can record biometric data. AOptix executive Joey Pritikin told Wired, "this new gadget will be able to scan faces at up to two meters away, irises from one meter, and voice from within a typical distance from a phone. Thumbprints will still require scanning against the phone's glass face". Biometrics, also known as biostatistics or biometry, in biology, the development and application of statistical and mathematical methods to the analysis of data resulting from biological observations and phenomena.

55. MultiRae Pro Wireless Portable Multi Threat Radiation and Chemical Detector: RAE Systems was awarded a five-year contract by the Environmental Protection Agency (EPA) for its MultiRAE Pro monitors. The Federal Emergency Management Agency (FEMA) has also adopted the MultiRAE Pro monitor to its Urban Search and Rescue (US&R) equipment cache. Description: The RAE Systems MultiRAE Pro is a CBRN multithread detection tool that combines continuous monitoring capabilities for radiation and combustible gases. The MultiRAE Pro can be configured with 33 intelligent sensors to fully meet the monitoring needs of applications such as HazMat response, CBRN/TIC/TIM detection, EOD, homeland security, and civil defense. Mission: The MultiRAE Pro provides a handheld multi-gas sensor with 5 sensor channels that can detect toxic or hazardous vapors: Users; US Marine

Corps. The MultiRae Pro qualifies as a multi sensor detector case that has interchangeable sensors; a battery power source; an internet connection, and, a GPS connection.

56. PositiveID - Boeing / "M-Band"; Apple (iPhone) Smartphone:

PositiveID's (PSID) M-BAND was developed by the Company's MicroFluidic Systems ("MFS") subsidiary, which received funding in excess of \$30 million from the Department of Homeland Security (DHS). M-BAND is positioned to capitalize on BioWatch Generation 3, the U.S. Government's \$3.1 billion program to detect the release of pathogens into the air as part of a defense against potential terrorist attacks on major American cities. In Dec. 2012, PSID entered into an exclusive license agreement with The Boeing Company ("Boeing"). Boeing paid PSID \$2.5 million; exclusive distributor of M-BAND for BioWatch Gen-3. M-Band is a bio-aerosol monitor with fully integrated systems for sample collection, processing and detection modules that continuously analyze air samples for the detection of bacteria, viruses, and toxins and transmit the results to smartphones (e.g. Apple iPhone), or other devices, every three hours.

57. PositiveID / "Firefly DX"; Samsung Galaxy s6 Smartphone: PositiveID's

(PSID) M-BAND developed by MicroFluidic Systems ("MFS") subsidiary; received funding excess of \$30 million from Department of Homeland Security (DHS). Firefly Dx, builds upon technology advances achieved in development of M-BAND system. Firefly Dx overview: Miniaturized version of M-BAND using same technologies, real-time PCR detection; Hand-held detection provides sample purification and biological analysis; A two-part device consisting of a portable handheld instrument with wireless communication and disposable single-use cartridges all analytical elements; Data processed in real time and communicated to PC or smartphone (e.g., Galaxy s6) using mobile applications and cloud storage; Has the ability to detect and identify

common pathogens and diseases as various strains of influenza, E.coli, MRSA and human papilloma virus (“HPV”).

58. 2”x2” Detection Device (DD) Samsung Galaxy s6 Smartphone: In response to the Domestic Nuclear Detection Office’s (DNDO) BAA 09-102 Passport Systems, Inc. of Billerica, MA has developed a system of networked portable spectroscopic radiation detectors to improve the detection, localization, and identification of radiological threats. The Intelligent Radiation Sensor Systems (IRSS) 2”x2” Detection Device (DD) comprises: a Standard Interface; an Individual Radiation Detection Device (IRDD); and, an Android smartphone (including GPS). The Detector Augmentation Device (DAD) was implemented by leveraging existing Android smartphone technology, and it provides all the functionality to interface with the IRDD and the operational user through an appropriate, configurable GUI. The DAD also provides a platform for all the communications and computation. The DAD is responsible for establishing and maintaining a robust ad hoc network. This is accomplished using the native WiFi (IEEE 802.11b) capability on the smartphone and open source mesh network applications.

59. 1”x2” Detection Device (DD) Samsung Galaxy s6 Smartphone: In response to the Domestic Nuclear Detection Office’s (DNDO) BAA 09-102 Passport Systems, Inc. of Billerica, MA has developed a system of networked portable spectroscopic radiation detectors to improve the detection, localization, and identification of radiological threats. The Intelligent Radiation Sensor Systems (IRSS) 1”x2” Detection Device (DD) comprises: a Standard Interface; an Individual Radiation Detection Device (IRDD); and, an Android smartphone (including GPS). The Detector Augmentation Device (DAD) was implemented by leveraging existing Android smartphone technology, and it provides all the functionality to

interface with the IRDD and the operational user through an appropriate, configurable GUI. The DAD also provides a platform for all the communications and computation. The DAD is responsible for establishing and maintaining a robust ad hoc network. This is accomplished using the native WiFi (IEEE 802.11b) capability on the smartphone and open source mesh network applications.

60. NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6

Smartphone: Passport Systems Inc. G300 Radiation Detector alarms when radiation levels are detected; used as a standalone device or as part of a network; is the same size, form factor and weight as a smartphone and easily added to the belt of safety personnel; is paired with a smartphone via Bluetooth, and automatically joins a SmartShield Network. The Network Sensor System (Nets<sup>2</sup>) SmartShield G300 Radiation Detector is designed specifically for the DHS Securing-the-Cities initiative and Human Portable Tripwire program. Passport Systems, in response to the US Department of Homeland Security (DHS) needs, developed a compact and scalable radiation detector system, the NetS<sup>2</sup> SmartShield. The smartphone is integral to the advanced features of the SmartShield system. It provides an advanced user interface, a computer to handle advanced identification, geolocation, and data fusion algorithms, and an integrated communications platform to complete reachback as well as data collaboration functions.

61. NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6

Smartphone: Passport Systems Inc. G500 Radiation Detector alarms when radiation levels are detected; used as a standalone device or as part of a network; is the same size, form factor and weight as a smartphone and easily added to the belt of safety personnel; is paired with a smartphone via Bluetooth, and automatically joins a SmartShield Network. The Network Sensor System (Nets<sup>2</sup>) SmartShield G500 Radiation Detector is designed specifically for the DHS

Securing-the-Cities initiative and Human Portable Tripwire program. Passport Systems, in response to the US Department of Homeland Security (DHS) needs, developed a compact and scalable radiation detector system, the NetS<sup>2</sup> SmartShield. The smartphone is integral to the advanced features of the SmartShield system. It provides an advanced user interface, a computer to handle advanced identification, geolocation, and data fusion algorithms, and an integrated communications platform to complete reachback as well as data collaboration functions.

62. "TOUGHBOOK 31" Laptop / Passport Systems Inc. Base Control Unit (BCU): The Passport Systems "Base Control Unit" (BCU) is implemented using the Panasonic Toughbook ruggedized laptop, and in response to the Domestic Nuclear Detection Office's (DNDO) BAA 09-102 Passport Systems, Inc. has developed a system of networked portable spectroscopic radiation detectors to improve the detection, and identification of radiological threats. The Intelligent Radiation Sensor Systems (IRSS) 1"x2" and 2"x2" Detection Devices (DD). The Network Sensor System (Nets<sup>2</sup>) SmartShield G300 and G500 Radiation Detectors are designed specifically for the DHS Securing-the-Cities initiative and Human Portable Tripwire program, in response to the US Department of Homeland Security (DHS) needs. The BCU runs the same data collection and analysis software developed for the 1"x2" and 2"x2" Detection Devices (DD) and software developed for the SmartShield G300 and G500 Radiation Detectors to support user interface requirements of the Samsung Galaxy s6 smartphones.

63. Oshkosh Defense Autonomous Unmanned Ground Vehicle (UGV) "TerraMax": U.S. defense contractor Oshkosh Defense autonomous unmanned ground vehicle (UGV) "TerraMax" is now equipped with radar and LIDAR; which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges; uses lasers to detect nearby objects, along with a drive-by-wire system that electronically

controls engine speed, transmission, braking, and steering. The system does more than steer and hit the throttle and brakes. It can intelligently control the driveline locks to navigate deep sand or mud, without input from the operator. The “TerraMax” technology has recently completed its first technical assessment (LTA) for the U.S. Marine Corps UGV (CUGV) initiative. The Cargo UGV program is sponsored by the Marine Corps Warfighting Laboratory and the Joint Ground Robotics Enterprise Robotics Technology Consortium.

64. Dream Hammer's "Ballista" Software for Computer, Tablet or Smartphone: Its first product, Ballista, is an OS for drones and allows one person to simultaneously control multiple drones of any type. It features a plug and play architecture that can be integrated into any unmanned system. Ballista has been licensed to government agencies including the U.S. Navy's Program Executive Office (PEO) Unmanned Aviation and Strike Weapons. Owners of separate systems can share software, which over the long run could save the Defense Department billions of dollars in software costs, officials predict. On July 3, 2013, DreamHammer announced it was partnering with Lockheed Martin to use the company's software for integrated command and control of Lockheed Martin's unmanned aerial vehicles. Lockheed and the Pentagon have worked with DreamHammer to create the software which works with boats, planes or trucks. Ballista open software platform allows for autonomous and simultaneous control. Autonomous and unmanned vehicles involve a transfer of control from direct human input to automated or remote control.

65. “COINS” Nano-Embedded Sensors for Smartphones: The Center of Integrated Nanomechanical Systems (COINS) is a multidisciplinary nanoscale science and engineering center (NSEC) funded by the National Science Foundation with its headquarters at the University of California at Berkeley and satellite campuses at Stanford, Caltech, and



University of California at Merced. The goal of COINS is to develop and integrate cutting-edge nanotechnologies into a versatile platform with various ultra-sensitive, ultra-selective, self-powering, mobile, wirelessly communicating detection applications; develop novel low-power, low-cost, selective nanomaterials-enable sensing systems for real-time detection of explosives, toxicants, and radiation and interface Nano-enable sensors with smart phones, eventually becoming embedded in the device.

66. Variable's "NODE+Oxa" for the Apple (iPhone) Smartphone. In 2007, when the Department of Homeland Security (DHS) issued a call for a sensor that could equip a smartphone with the ability to detect dangerous gases and chemicals, NASA Ames Research Center scientist Jing Li proposal in response to DHS's Cell-All initiative was awarded funding through an interagency agreement in 2008. Li approached George Yu of Genel Systems Inc. The team settled on the iPhone, which was new at the time, and Li convinced the program manager at DHS that the sensor should be a module attached to the outside of the phone, rather than a system built into the phone's guts. After founding Variable Inc. Yu commercialize the NODE+Oxa which accurately measures the levels of carbon monoxide, nitric oxide, nitrogen dioxide, chlorine gas, sulfur dioxide, or hydrogen sulfide in an indoor environment. It can store data or transmit it to a smartphone using Bluetooth wireless technology.

67. Smartphone-Based Rapid Diagnostic Tests: The chemical and biomolecular engineering department at the UH Cullen College of Engineering have won the National Science Foundation's Innovation Corps (I-Corps) award. The UH I-Corps team will use the \$50,000 award to develop highly sensitive rapid medical diagnostic tests that use "glow-in-the-dark" nanoparticles to signal the presence of a disease target. Using phosphorescent nanoparticles and a light-based readout allow much more sensitive, quantitative and reliable test



results. Moreover, Raja said an inexpensive smartphone attachment, designed like a phone case, could be manufactured that would allow the test results to be read with the phone's built-in camera and flash. "A user would have to add the sample, such as a fingerprick quantity of blood, to a disposable test cartridge containing our nanoparticles, and then insert it into the smartphone attachment after 15 minutes. The flash from the camera will excite the luminescent particles, and the camera will capture the light emitted by them," Raja said. A smartphone app will be developed to analyze the picture captured by the camera.

### **COUNT I:**

**Unlicensed Use and/or Manufacture of Systems by the United States that Infringes U.S. Patents: 7,385,497; 8,106,752; RE43,891; RE43,990; 9,096,189 under 28 U.S.C. § 1498(a)**

68. Plaintiff re-alleges and incorporates by reference the allegations of paragraphs 1 through 67, as if fully set forth herein.

69. Plaintiff is the sole holder of all rights, titles, and interests in and to the '497; '752; '891; '990; and '189 patents, including all rights to enforce this patent and collect past and future damages for infringement.

70. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the '189 Patent, claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent, and claims 44, 55, 45, 48, 53, and 52 of the '891 Patent as a current manufacturer, consumer, and/or user of Panasonic "TOUGHBOOK 31" Laptop (communication device) for controlling the Lockheed Martin K-Max Unmanned Self-flying Helicopter that is equipped with the Autonomous Aerial Cargo Utility System (AACUS). The Lockheed Martin K-Max unmanned helicopter is controlled from a Panasonic "TOUGHBOOK 31" Laptop as a result

of the cooperative research and development agreements to develop and commercialize the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program.

71. As a result of contracts with Lockheed Martin and Panasonic Corporation for the development and commercialization of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS), the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, '990, and '891 Patents.

72. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the '189 Patent, claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent, and claims 23, 55, 27, 31, and 30 of the '891 Patent as a current manufacturer, consumer, and/or user of an Apple iPad Tablet (communication device) for controlling the Boeing MH-6 Little Bird Helicopter that is equipped with the Autonomous Aerial Cargo Utility System (AACUS). The Boeing MH-6 Little Bird helicopter is controlled from an Apple iPad Tablet as a result of the cooperative research and development agreements to develop and commercialize the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program.

73. As a result of contracts with The Boeings Company and Apple Inc. for the development and commercialization of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS), the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, '990, and '891 Patents.

74. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 125, 148, 135, 35, 39, and 44 of the '990 Patent, and claim

36 of the '752 Patent as a current manufacturer, consumer, and/or user of the "mLOCK locking device for autonomous operation of a locking device based on a status of the locking device, wherein the one or more sensors include one or more of a movement sensor, a temperature sensor, a humidity sensor, an infrared sensor, a radioactivity detection sensor, an acoustic sensor, and a chemical detection sensor. The Department of Homeland Security (DNS) "TRUST" RFP system Communication Requirements. iControl Inc. locking seal "M-Lock" (Patent application: mLOCK Device and Associated Methods; US 20100283575 A1).

75. As a result of contracts with L-3 Communications and iControl Inc. for the development and commercialization of the Department of Homeland Security (DNS) "TRUST" RFP system Communication Requirements. iControl Inc. locking seal "M-Lock", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '752, and '990 Patents.

76. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 4 of the '189 Patent, and claims 118, 122, 124, and 108 of the '990 Patent as a current manufacturer, consumer, and/or user. By using easily produced super-small components, the devices potentially can be installed in a variety of devices, such as smartphones, robots or commercial appliances. Another goal is to install a sensor on a Google Nexus 7 tablet computer and conduct some wireless sensor networking. The NRL: SIN-VAPOR / Smartphone System: Developed by the U.S. Naval Research Laboratory (NRL) in Washington, D.C.

77. As a result of contracts with the U.S. Naval Research Laboratory (NRL), Google, Samsung Group and Apple Inc. for the development and commercialization of the NRL: SIN-VAPOR / Smartphone System the United States has used, authorized the use, and

manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

78. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 7 of the '189 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Smartphone (iPhone) Microscope". Aydogan Ozcan, a professor at UCLA and his team have created a portable smartphone attachment that can be used to perform sophisticated field testing to detect viruses and bacteria. Funding support for the Ozcan Research Group comes from the Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research. Commercialize through Holomic LLC.

79. As a result of contracts with Holomic LLC and Apple Inc. and the Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research for the development and commercialization of the "Smartphone (iPhone) Microscope" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

80. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the '189 Patent, and claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the Samsung Galaxy s6 "BioPhone". The Samsung Galaxy s6 "BioPhone" smartphone can measure your heart and breathing rates, even if you're not directly touching it. Researchers at MIT are working on a project called BioPhone that derives biological signals from your smartphone's accelerometer, which they say can capture the small movements of your body that result from the beating of

your heart and rising and falling of your chest. This information is useful to base medical diagnoses in real-life conditions and to help track chronic health conditions and effects of therapeutic interventions. Research is based upon work supported by the National Science Foundation (NSF CCF-1029585), Samsung, and the MIT Media Lab Consortium.

81. As a result of contracts with the National Science Foundation (NSF), Samsung Group, and the MIT Media Lab Consortium for the development and commercialization of the Samsung Galaxy s6 "BioPhone" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

82. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 7 of the '189 Patent, and claims 118, 17, 92, 25, 12, 124 and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the Samsung Galaxy s6 "Microscope" Smartphone. The U.S. Army Edgewood Chemical Biological Center (ECBC) is developing cellphone-based wide-field fluorescent imaging of microbeads for pathogen detection. Scientists at ECBC worked with a team at the University of California, Los Angeles (UCLA), to adapt its prototype of a plastic, clip-on "microscope" to fit a Samsung Galaxy Android phone, commonly used by the Army. This device clips directly over the camera of the Smartphone and operates just like a microscope. The UCLA team is developing the hardware and the software for the device, with ECBC's team providing the diagnostic and detection assays that it will utilize. The team is focused on biological diagnostic tests. ECBC has also partnered with Holomic, LLC, and a small business in California.

83. As a result of contracts with the , U.S. Army Edgewood Chemical Biological Center (ECBC), Samsung Group, and Holomic LLC for the development and

commercialization of the Samsung Galaxy s6 "Microscope" smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

84. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 5 of the '189 Patent, and claims 119, 17, 124 and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the "VOCKET System" / "Nett Warrior" Smartphone System: The Army's Edgewood Chemical Biological Center (ECBC) researchers are refining for Army use a commercial technology that will allow soldiers to accurately and rapidly detect an array of chemical and biological hazards - from mustard agent to anthrax The VOCKET system is a small electronic device developed at ECBC and even manufactured there, for now, on the center's 3D printers. The device reads the result of chemical detection paper and transmit the results into the Army's network via the soldier-worn "Nett Warrior" smartphone system. The "Nett Warrior" system is a Samsung Galaxy Note II smartphone.

85. As a result of contracts with the , U.S. Army Edgewood Chemical Biological Center (ECBC), and the Samsung Group for the development and commercialization of the "VOCKET System" / "Nett Warrior" Smartphone System the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

86. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of the Eureka Aerospace High Powered Electromagnetic System, or HPEMS: The U.S. Air Force request for an "air-delivered capability

to disable moving ground vehicles while minimizing harm to occupants." Presumably the Air Force wants to look beyond helicopter-mounted snipers, and so Eureka Aerospace's device could potentially fit the bill. The U.S. Marines have lined up as possible customers. The idea is that an electromagnetic pulse (from a remote location) would be used to disable a car's microprocessors, chips, and whatever other electronics are keeping it running. Boeings; as partner provided funds for research.

87. As a result of contracts with the U.S. Air Force (DOA), the U.S. Marines, Eureka Aerospace, and the Boeings Company for the development and commercialization of the Eureka Aerospace High Powered Electromagnetic System, or HPEMS the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

88. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, 27, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of the Northrop Grumman X-47B UCAS / X-47B Control Display Unit (CDU): The U.S. Navy's UCAS-D program is designed to demonstrate the ability of a, fighter-sized unmanned aircraft to land on and be launched from the flight deck of a Navy aircraft carrier underway at sea. Northrop Grumman Corporation (NYSE: NOC), a leader in unmanned systems, serves as the Navy's prime contractor for the UCAS-D program, which is managed by U.S. Naval Air Systems Command (NAVAIR). Under contract awarded in Aug. 2007, Northrop Grumman designed the X-47B. From a remote place the X-47B Control Display Unit controls the aircraft's stall, stop, and slow-down means.

89. As a result of contracts with the U.S. Naval Air Systems Command (NAVAIR), and the Northrop Grumman Corporation (NYSE: NOC) for the development and



commercialization of the Northrop Grumman X-47B UCAS / X-47B Control Display Unit (CDU) the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

90. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 5 of the '189 Patent, and claims 119, 17, 124, and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the GammaPix for Android Smartphones: GammaPix for Android Smartphones (e.g. Samsung Galaxy s6) scans for radiation using a smartphone camera sensor. Scanning for radiation and radioactive explosives the camera looks for a particular 'signature' left behind by gamma rays. It measures the rate at which rays hit the lens to determine radiation levels. App detects radiation in planes, hospitals, contaminated items and more. It was created by Connecticut-based developers Image Insight under a \$679,000 contract with the U.S. Defense Advanced Research Projects Agency (DARPA).

91. As a result of contracts with the U.S. Defense Advanced Research Projects Agency (DARPA), Samsung Group, and Image Insight for the development and commercialization of the GammaPix for Android Smartphones the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

92. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 7 of the '189 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the Smartphone (iPhone) Biosensor "Cradle": University of Illinois researchers developed a cradle and app for the iPhone to make a handheld biosensor that uses the phone's own camera and processing power to detect any kind of biological molecules or cells. At the heart of the iPhone biosensor is a



photonic crystal. When anything biological attaches to the photonic crystal - such as protein, cells, pathogens or DNA - the reflected color will shift. The group received a grant from the National Science Foundation (NSF) to expand the range of biological experiments that can be performed with the iPhone.

93. As a result of contracts with the National Science Foundation (NSF), University of Illinois, and Apple Inc. for the development and commercialization of the Smartphone (iPhone) Biosensor "Cradle" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

94. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 3 of the '189 Patent, and claims 18, 12, 28, 25, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor: The MIT "NFC" Smartphone sensors are made from modified near-field communication (NFC) tags. These tags, which receive the little power they need from the Samsung Galaxy s6 smartphone reading them, function as wirelessly addressable barcodes. The modified tags are referred to as CARDS: chemically actuated resonant devices. When a smartphone pings the CARD, the CARD responds only if it can receive sufficient power at the smartphone transmitted radio frequencies (RF). MIT's research was funded by the U.S. Army Research Laboratory and the U.S. Army Research Office.

95. As a result of contracts with the U.S. Army Research Laboratory (ARL), the U.S. Army Research Office (ARO), Massachusetts Institute of Technology (MIT), and the Samsung Group for the development and commercialization of the MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor the United States has used, authorized the use, and manufactured,

without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

96. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, 2, and 4 of the '497 Patent, claims 34 and 37 of the '752 Patent, claims 2 and 8 of the '189 Patent, and claims 119, 29, 18, 12, 28, 25, 20, 118, 17, 92, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Cell-All":

Synkera MikroKera Ultra: Synkera presented the MikroKera Ultra Module at the Department of Homeland Security S&T "Cell-All" demonstration in Los Angeles on September 28, 2011. Synkera offers a general purpose digital module for evaluation and use of MikroKera Ultra chemical sensors. Synkera Technologies has been funded by DHS to develop sensors that are suitable for integration into cell phones and other ubiquitous electronic devices carried by first responders and the public at large. The DHS S&T "Cell-All" project goal is to develop sensors that can detect life-threatening gases to be incorporated into cell phones. One feature of the Synkera MikroKera Ultra is: available with or without case. The monitoring equipment for this "Cell-All" project is at least a Samsung Galaxy s6 smartphone that has an Android operating system (O/S). The Department of Homeland Security's (DHS) Science and Technology Directorate (S&T), Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. S&T pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. Jing Li, a physical scientist at NASA's Ames Research Center, developed new technology that would bring compact, low-cost, low-power, high-speed nanosensor-based chemical sensing chip which consists of 64 nanosensors and plugs into an Apple iTouch 30-pin dock connector.

97. As a result of contracts with the U.S. Department of Homeland Security (DHS), Synkera Technologies Inc., and NASA's Ames Research Center; cooperative agreements with Qualcomm Inc., LG Electronics, Apple Inc., and the Samsung Group for the development and commercialization of the "Cell-All": Synkera MikroKera Ultra and a low-cost, low-power, high-speed nanosensor-based chemical sensing chip which consists of 64 nanosensors, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '497, '752, '189 and '990 Patents.

98. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, and 5 of the '189 Patent, and claims 119, 18, 12, 28, 25, 20, 32, 30, 17, 108 and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Biotouch System" / "Nett Warrior" Smartphone System: The U.S. Army developed a biological and chemical detection system. They developed volatile organic compound (VOC) strips that work with a device called a Biotouch. Biotouch relays information from VOC strips and sends results to a Nett Warrior Samsung Galaxy Note II smartphone, Defense Systems reports. Partnership between scientists and engineers at U.S. Army Edgewood Chemical Biological Center (ECBC), iSense, LLC., U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC) and the Defense Threat Reduction Agency (DTRA). ECBC, iSense, CERDEC and DTRA work is to evaluate potential chemical/biological (CB) threats using smartphones. "The idea is to have two smartphones: the Biotouch Samsung Galaxy s6 smartphone that could test the VOC and the Nett Warrior Samsung Galaxy Note II smartphone. VOCs are postage stamp-sized, colorimetric sensor assays with 88 different indicator dyes developed by iSense LLC (Boston, MA).

99. As a result of contracts with the U.S. Army Edgewood Chemical Biological Center (ECBC), iSense, LLC., U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), the Samsung Group, and the Defense Threat Reduction Agency (DTRA) for the development and commercialization of the "Biotouch System" / "Nett Warrior" Smartphone System the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189 and '990 Patents.

100. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 4, of the '189 Patent, and claims 118, 122, 124, and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the iPhone "Biodetector" Smartphone: Pro. Brian T. Cunningham, University of Illinois has won a \$300,000 National Science Foundation grant for research into turning smartphones into biodetectors. The biodetectors used in counterterrorism fall into three broad categories: biochemical systems detecting a DNA sequence or protein unique to the bioagent through interaction with a test molecule; tissue-based systems, in which a bioagent or toxic chemical affect living mammalian cells, causing them to undergo some measurable response; and chemical mass spectrometry systems, which break samples down into their chemical components whose weights are then compared to those of known biological or chemical agents.

101. As a result of contracts with the National Science Foundation (NSF) and the University of Illinois for the development and commercialization of the iPhone "Biodetector" Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189 and '990 Patents.

102. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 7, of the '189 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "PathTracker" An iPhone-based Detection Instrument: National Science Foundation (NSF) to invest \$1 million in smartphone-based system for mobile disease detection. Professor Brian T. Cunningham the director of the Micro and Nanotechnology Laboratory (MNTL) and also a bioengineering professor at the University of Illinois, is the principal investigator for PathTracker: A smartphone-based system for mobile infectious disease detection and epidemiology. The PathTracker will mitigate economic losses associated with infectious disease in the horse industry, the developed technology will be equally applicable to humans, food, animals, companion animals, Ebola, HIV, tuberculosis, and malaria through a custom handheld detection instrument that interfaces with the back-facing camera of a conventional smartphone (e.g. iPhone).

103. As a result of contracts with the National Science Foundation (NSF) and the University of Illinois for the development and commercialization of the "PathTracker" an iPhone-based Detection Instrument the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189 and '990 Patents.

104. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, 2, and 3 of the '189 Patent, claim 34, of the '752 Patent, and claims 18, 12, 28, 25, 20, 32, 30, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts; it is also a

unified, flexible and functional IT platform that has become the foundation on which the Navy and Marine Corps support their broader strategic objectives. NMCI connects Sailors, Marines and Civilians in the continental U.S., Hawaii, and Japan. Navy NMCI users may begin transitioning from Blackberry devices to Apple and Samsung Android smartphones and tablets. NMCI users are now authorized to procure and use the iPhone 5s, iPhone 6, and iPhone 6 Plus smartphones, as well as the iPad Air and iPad Air 2 tablets with NMCI Email. All Navy organizations are to begin the contracting and transition process through their wireless account manager for iPhones and iPad service. Government furnished equipment (GFE). GFE includes laptops; smartphones; tablets; and a virtual desktop solution, such as "NMCI". Unlike GFE, personal devices cannot be integrated into the network's device management tools.

105. As a result of contracts with the Navy Marine Corps Intranet (NMCI) Network, Apple Inc. and the Samsung Group for the development and commercialization of the Navy Marine Corps Intranet (NMCI) Network the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, 752, and '990 Patents.

106. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 4 of the '189 Patent, and claims 118, 122, 124, and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the FLIR: identiFINDER R300 / Smartphone System: FLIR Systems, Inc. announced on June 16, 2011 that the Defense Threat Reduction Agency (DTRA) has awarded it a \$1.1 million contract for a multi-year, multi-phase research and development contract to develop a mobile, ruggedized stand-off radiation detection system with identification capabilities. "FLIR has developed a radiation detection and identification device and is manufacturing the world's leading handheld radio-isotope identifier,

the identiFINDER,” said William Sundermeier, president of FLIR Detection and Protection. In particular, the FLIR identiFINDER R300 will identify threat objects. A threat object is radioactive material whose signature is that of material used for terrorist purposes. Threat materials are usually those used in a nuclear explosive devices or in Radiological Dispersive Devices (“Dirty” bombs). The device qualifies as a detector case with features of multiple sensors, internet and GPS connection.

107. As a result of contracts with the Defense Threat Reduction Agency (DTRA) and FLIR Systems for the development and commercialization of the Navy Marine Corps Intranet (NMCI) Network the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘189, and ‘990 Patents.

108. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 7 of the ‘189 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone: The biometrics company AOptix announced on Wednesday, February 13, 2013 that the Pentagon has awarded it, along with CACI International Inc., a \$3 million research contract to develop AOptix’s Smart Mobile Identity devices for the US Department of Defense. As Wired reported, a hardware peripheral and software suite that turns a regular Apple iPhone smartphone into a device that scans and transmits data at distances not possible for current scanning technology. AOptix’s hardware is a peripheral that wraps around a smartphone, so that it can record biometric data. AOptix executive Joey Pritikin told Wired, “this new gadget will be able to scan faces at up to two meters away, irises from one meter, and voice from within a typical distance from a phone. Thumbprints will still require



scanning against the phone's glass face". Biometrics, also known as biostatistics or biometry, in biology, the development and application of statistical and mathematical methods to the analysis of data resulting from biological observations and phenomena.

109. As a result of contracts with the U.S. Department of Defense (DoD), AOptix Technologies, CACI International Inc. and Apple Inc. for the development and commercialization of the AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

110. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 5 of the '189 Patent, and claims 119, 79, 124, and 78 of the '990 Patent as a current manufacturer, consumer, and/or user of the MultiRae Pro Wireless Portable Multi Threat Radiation and Chemical Detector: RAE Systems was awarded a five-year contract by the Environmental Protection Agency (EPA) for its MultiRAE Pro monitors. The Federal Emergency Management Agency (FEMA) has also adopted the MultiRAE Pro monitor to its Urban Search and Rescue (US&R) equipment cache. Description: The RAE Systems MultiRAE Pro is a CBRN multithread detection tool that combines continuous monitoring capabilities for radiation and combustible gases. The MultiRAE Pro can be configured with 33 intelligent sensors to fully meet the monitoring needs of applications such as HazMat response, CBRN/TIC/TIM detection, EOD, homeland security, and civil defense. Mission: The MultiRAE Pro provides a handheld multi-gas sensor with 5 sensor channels that can detect toxic or hazardous vapors: Users; US Marine Corps. The MultiRae Pro qualifies as a multi sensor detector case that has interchangeable sensors; a battery power source; an internet connection, and, a GPS connection.



111. As a result of contracts with the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), US Marine Corps, and RAE Systems for the development and commercialization of the MultiRae Pro Wireless Portable Multi Threat Radiation and Chemical Detector the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

112. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 7 of the '189 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the PositiveID - Boeing / "M-Band"; Apple (iPhone) Smartphone: PositiveID's (PSID) M-BAND was developed by the Company's MicroFluidic Systems ("MFS") subsidiary, which received funding in excess of \$30 million from the Department of Homeland Security (DHS). M-BAND is positioned to capitalize on BioWatch Generation 3, the U.S. Government's \$3.1 billion program to detect the release of pathogens into the air as part of a defense against potential terrorist attacks on major American cities. In Dec. 2012, PSID entered into an exclusive license agreement with The Boeing Company ("Boeing"). Boeing paid PSID \$2.5 million; exclusive distributor of M-BAND for BioWatch Gen-3. M-Band is a bio-aerosol monitor with fully integrated systems for sample collection, processing and detection modules that continuously analyze air samples for the detection of bacteria, viruses, and toxins and transmit the results to smartphones (e.g. Apple iPhone), or other devices, every three hours.

113. As a result of contracts with the Department of Homeland Security (DHS), PositiveID Corporation, the Boeings Company, and Apple Inc. for the development and commercialization of the PositiveID - Boeing / "M-Band"; Apple (iPhone) Smartphone the

United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

114. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the '189 Patent, and claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the PositiveID / "Firefly DX"; Samsung Galaxy s6 Smartphone: PositiveID's (PSID) M-BAND developed by MicroFluidic Systems ("MFS") subsidiary; received funding excess of \$30 million from Department of Homeland Security (DHS). Firefly DX, builds upon technology advances achieved in development of M-BAND system. Firefly Dx overview: Miniaturized version of M-BAND using same technologies, real-time PCR detection; Hand-held detection provides sample purification and biological analysis; A two-part device consisting of a portable handheld instrument with wireless communication and disposable single-use cartridges all analytical elements; Data processed in real time and communicated to PC or smartphone (e.g., Galaxy s6) using mobile applications and cloud storage; Has the ability to detect and identify common pathogens and diseases as various strains of influenza, E.coli, MRSA and human papilloma virus ("HPV").

115. As a result of contracts with the Department of Homeland Security (DHS), PositiveID Corporation, and the Samsung Group for the development and commercialization of the PositiveID / "Firefly DX"; Samsung Galaxy s6 Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189, and '990 Patents.

116. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, 2, and 4 of the '497 Patent, claims 34, and 37 of the '752

Patent, claims 1, and 2 of the '189 Patent, and claims 119, 29, 18, 12, 28, 25, 20, 124, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the 1"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCU) "TOUGHBOOK 31" Panasonic Laptop: The Passport Systems "Base Control Unit" (BCU) is implemented using the Panasonic Toughbook ruggedized laptop, and in response to the Domestic Nuclear Detection Office's (DNDO) BAA 09-102 Passport Systems, Inc. has developed a system of networked portable spectroscopic radiation detectors to improve the detection, and identification of radiological threats. The Intelligent Radiation Sensor Systems (IRSS) 1"x2" and 2"x2" Detection Devices (DD). The Network Sensor System (Nets<sup>2</sup>) SmartShield G300 and G500 Radiation Detectors are designed specifically for the DHS Securing-the-Cities initiative and Human Portable Tripwire program, in response to the US Department of Homeland Security (DHS) needs. The BCU runs the same data collection and analysis software developed for the 1"x2" and 2"x2" Detection Devices (DD) and software developed for the SmartShield G300 and G500 Radiation Detectors to support user interface requirements of the Samsung Galaxy s6 smartphones.

117. As a result of contracts with the Domestic Nuclear Detection Office's (DNDO), Passport Systems, Inc., Panasonic Corporation, and the Samsung Group for the development and commercialization of the 1"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCU)

"TOUGHBOOK 31" Panasonic Laptop the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '497, '189, 752, and '990 Patents.

118. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 44, 55, and 27 of the '891 Patent, as a current manufacturer, consumer, and/or user of the Oshkosh Defense Autonomous Unmanned Ground Vehicle (UGV) "TerraMax": U.S. defense contractor Oshkosh Defense autonomous unmanned ground vehicle (UGV) "TerraMax" is now equipped with radar and LIDAR; which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges; uses lasers to detect nearby objects, along with a drive-by-wire system that electronically controls engine speed, transmission, braking, and steering. The system does more than steer and hit the throttle and brakes. It can intelligently control the driveline locks to navigate deep sand or mud, without input from the operator. The "TerraMax" technology has recently completed its first technical assessment (FTA) for the U.S. Marine Corps UGV (CUGV) initiative. The Cargo UGV program is sponsored by the Marine Corps Warfighting Laboratory and the Joint Ground Robotics Enterprise Robotics Technology Consortium.

119. As a result of contracts with the U.S. Marine Corps, and Oshkosh Defense LLC for the development and commercialization of the Oshkosh Defense Autonomous Unmanned Ground Vehicle (UGV) "TerraMax" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

120. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 44, 55, and 27 of the '891 Patent, as a current manufacturer,

consumer, and/or user of the DreamHammer "Ballista" Software for Computer, Tablet or Smartphone: Its first product, Ballista, is an OS for drones and allows one person to simultaneously control multiple drones of any type. It features a plug and play architecture that can be integrated into any unmanned system. Ballista has been licensed to government agencies including the U.S. Navy's Program Executive Office (PEO) Unmanned Aviation and Strike Weapons. Owners of separate systems can share software, which over the long run could save the Defense Department billions of dollars in software costs, officials predict. On July 3, 2013, DreamHammer announced it was partnering with Lockheed Martin to use the company's software for integrated command and control of Lockheed Martin's unmanned aerial vehicles. Lockheed and the Pentagon have worked with DreamHammer to create the software which works with boats, planes or trucks. Ballista open software platform allows for autonomous and simultaneous control. Autonomous and unmanned vehicles involve a transfer of control from direct human input to automated or remote control.

121. As a result of contracts with the U.S. Navy, DreamHammer Inc., Lockheed Martin Corporation, the United States Department of Defense Pentagon, Apple Inc., and the Samsung Group for the development and commercialization of the DreamHammer "Ballista" Software for Computer, Tablet or Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

122. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the '189 Patent, and claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the "COINS" Nano-Embedded Sensors for Smartphones: The Center of Integrated Nanomechanical Systems

(COINS) is a multidisciplinary nanoscale science and engineering center (NSEC) funded by the National Science Foundation with its headquarters at the University of California at Berkeley and satellite campuses at Stanford, Caltech, and University of California at Merced. The goal of COINS is to develop and integrate cutting-edge nanotechnologies into a versatile platform with various ultra-sensitive, ultra-selective, self-powering, mobile, wirelessly communicating detection applications; develop novel low-power, low-cost, selective nanomaterials-enable sensing systems for real-time detection of explosives, toxicants, and radiation and interface Nano-enable sensors with smart phones, eventually becoming embedded in the device.

123. As a result of contracts with the National Science Foundation (NSF), the Center of Integrated Nanomechanical Systems (COINS), the University of California at Berkeley, Stanford, Caltech, the University of California at Merced, and Apple Inc. for the development and commercialization of the “COINS” Nano-Embedded Sensors for Smartphones the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘189 and ‘990 Patents.

124. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the ‘189 Patent, and claims 18, 12, 28, 25, 20, 32, and 30 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the Variable “NODE+Oxa” for the Apple (iPhone) Smartphone. In 2007, when the Department of Homeland Security (DHS) issued a call for a sensor that could equip a smartphone with the ability to detect dangerous gases and chemicals, NASA Ames Research Center scientist Jing Li proposal in response to DHS’s Cell-All initiative was awarded funding through an interagency agreement in 2008. Li approached George Yu of Genel Systems Inc. The team settled on the iPhone, which was new at the time, and Li convinced the program manager at DHS that the sensor should be a

module attached to the outside of the phone, rather than a system built into the phone's guts.

After founding Variable Inc. Yu commercialize the NODE+Oxa which accurately measures the levels of carbon monoxide, nitric oxide, nitrogen dioxide, chlorine gas, sulfur dioxide, or hydrogen sulfide in an indoor environment. It can store data or transmit it to a smartphone using Bluetooth wireless technology.

125. As a result of contracts with the Department of Homeland Security (DHS), NASA Ames Research Center, Genel Systems Inc., Variable Inc., and Apple Inc. for the development and commercialization of the Variable "NODE+Oxa" for the Apple (iPhone) Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '189 and '990 Patents.

126. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 1 of the '189 Patent, and claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the Smartphone-Based Rapid Diagnostic Tests: The chemical and biomolecular engineering department at the UH Cullen College of Engineering have won the National Science Foundation's Innovation Corps (I-Corps) award. The UH I-Corps team will use the \$50,000 award to develop highly sensitive rapid medical diagnostic tests that use "glow-in-the-dark" nanoparticles to signal the presence of a disease target. Using phosphorescent nanoparticles and a light-based readout allow much more sensitive, quantitative and reliable test results. Moreover, Raja said an inexpensive smartphone attachment, designed like a phone case, could be manufactured that would allow the test results to be read with the phone's built-in camera and flash. "A user would have to add the sample, such as a fingerprick quantity of blood, to a disposable test cartridge containing our nanoparticles, and then insert it into the smartphone attachment after 15 minutes. The flash from



the camera will excite the luminescent particles, and the camera will capture the light emitted by them,” Raja said. A smartphone app will be developed to analyze the picture captured by the camera.

127. As a result of contracts with the National Science Foundation (NSF), UH Cullen College, and Apple Inc. for the development and commercialization of the Smartphone-Based Rapid Diagnostic Tests the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘189 and ‘990 Patents.

## **COUNT II**

**Taking of subject matter described in and covered by United States Patent Numbers:**

**7,385,497; 7,636,033; 8,106,752; 8,334,761; 8,531,280; RE43,891; RE43,990; 9,096,189; and**

**Published Patent Application No. 2016-0027273 A1 under 28 U.S.C. § 1491**

**PRAYER**

WHEREFORE, Plaintiff respectfully requests judgment in its favor against the United States granting Plaintiff the following relief:

128. Entry of judgment that the inventions set forth in the '497; '752; '891; '990; and '189 patents have been used and manufactured by and for the United States without license or lawful right within the meaning of 28 U.S.C. § 1498(a);


129. Reasonable and entire compensation for the unlicensed use and manufacture by and for the United States of multi-sensor devices covered by and described in the '497; '752; '891; '990; and '189 patents under 28 U.S.C. § 1498(a), in an amount to be determined at trial;

130. Plaintiff's reasonable fees for expert witnesses and attorneys, plus its costs in accordance with 28 U.S.C. §§ 1498(a) and 1491(a);

131. Pre-judgment and post-judgment interest on Plaintiff's award; and

132. All such other relief that the Court deems just and proper.


Respectfully submitted,

s/   
Larry Golden  
Plaintiff, Pro Se  
740 Woodruff Rd., #1102  
Greenville, South Carolina 29607  
atpg-tech@charter.net

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on this 11th day of February, 2016, a true and correct copy of the foregoing AMENDED COMPLAINT § 1498(a) was served upon the following defendant by the methods indicated below:

Kirby W. Lee  
Attorney  
Commercial Litigation Branch  
Civil Division  
Department of Justice  
Washington, DC 20530  
(by Certified Mail)

s/   
Larry Golden, Pro Se  
740 Woodruff Rd., #1102  
Greenville, South Carolina 29607  
atpg-tech@charter.net